

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 5039 (1983): Distribution pillars for voltages not exceeding 1 000 V AC and 1200 V DC [ETD 7: Low Voltage Switchgear and Controlgear]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS : 5039 - 1983
(Reaffirmed 2001)

Indian Standard

SPECIFICATION FOR
DISTRIBUTION PILLARS FOR
VOLTAGES NOT EXCEEDING
1 000 V AC AND 1 200 V DC

(*First Revision*)

Third Reprint AUGUST 2001

UDC 621.316 : 344

© Copyright 1983

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

**AMENDMENT NO. 1 MARCH 1997
TO
IS 5039 : 1983 SPECIFICATION FOR
DISTRIBUTION PILLARS FOR VOLTAGES NOT
EXCEEDING 1 000 V AC AND 1 200 V DC**

(First Revision)

(Page 3, clause 0.3, line 6) and (Page 4, clause 2.0, line 2) — Substitute 'IS 8623 (Part 1) : 1993 Specification for low voltage switchgear and controlgear assemblies : Part 1 Requirements for type tested and partially type tested assemblies (first revision)' for 'IS : 8623 (Part 1) - 1977'.

(Page 6, clause 3.2, line 1), (Page 14, clause 8.2.1), and (Page 15, clause 8.3.1) — Substitute 'IS 8623 (Part 1) : 1993' for '5.2 of IS : 8623 (Part 1) - 1977, 8.2.1 of IS : 8623 (Part 1) - 1977, and 8.2.2 of IS : 8623 (Part 1) - 1977'.

(Page 7, clause 6.1, line 2), (Page 12, clause 6.8, line 2), and (Page 16, clause 8.6, line 2) — Substitute 'IS 13947 (Part 1) : 1993 LV Switchgear and controlgear : Part 1 General rules' for 'IS : 2147 - 1962', 'IS : 4237 - 1982' and 'IS : 2147 - 1962'.*

(Page 7, clause 6.1.1, line 4) — Substitute 'IS 1730 : 1989 Dimensions for steel plates, sheets strips and flats for general engineering purposes (second revision)' for 'IS : 1730 (Part 2) - 1974'.

(Page 8, clause 6.2.1, lines 1, 2 and 3) — Substitute 'IS 1258 : 1987 Bayonet lamp holders (third revision)' for 'IS : 1258 - 1979', 'IS 3854 : 1988 Switches for domestic and similar purposes (first revision)' for 'IS : 3854 - 1966' and 'IS 1293 : 1988 Plugs and socket outlets of rated voltage up to and including 250 volts and rated current up to and including 16 amperes (second revision)' for 'IS : 1293 - 1978'.

(Page 10, clause, 6.3.1, line 2) and (Page 12, clause 6.10.1, line 2) — Substitute 'IS 13703 (Part 1) : 1993 Low voltage fuses for voltages not exceeding 1 000 V AC or 1 500 DC : Part 1 General requirements' for 'IS : 9224 (Part 1) - 1979'.

(Page 11, clause 6.6.2, line 2) — Substitute 'IS 5578 : 1985 Guide for marking of insulated conductors (first revision)' for 'IS 375 : 1963'.

(ET 07)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR DISTRIBUTION PILLARS FOR VOLTAGES NOT EXCEEDING 1 000 V AC AND 1 200 V DC (*First Revision*)

Low Voltage Switchgear and Controlgear Sectional Committee,
ETDC 57

Chairman

SHRI V. S. BHATIA

Representing

Siemens India Ltd, Bombay

Members

SHRI S. G. NENE (<i>Alternate</i> to Shri V. S. Bhatia)	
SHRI C. R. BALASUBRAMANIAN	English Electric Co of India Ltd, Madras
SHRI M. SESHADRI (<i>Alternate</i>)	
SHRI S. K. BASU	Delhi Electric Supply Undertaking, New Delhi
SHRI Y. P. CHADHA (<i>Alternate</i>)	
SHRI K. K. BERRY	Central Small Scale Switchgear Manufacturers' Organization, New Delhi
SHRI SETHI (<i>Alternate</i>)	
SHRI S. N. BISWAS	Crompton Greaves Ltd, Bombay
SHRI B. G. KARAJGIKAR (<i>Alternate</i>)	
CHIEF ENGINEER (ELEC) II	Central Public Works Department, New Delhi
SURVEYOR OF WORKS (ELEC) II (<i>Alternate</i>)	
DIRECTOR	Central Power Research Institute, Bangalore
JOINT DIRECTOR, SWITCHGEAR TESTING & DEVELOPMENT STATION (<i>Alternate</i>)	
SENIOR DEPUTY DIRECTOR (<i>Alternate</i>)	
DIRECTOR (DISTRIBUTION)	Central Electricity Authority, New Delhi
DEPUTY DIRECTOR (UNION TERRITORIES DIRECTORATE (<i>Alternate</i>)	
SHRI V. C. DOSHI	Associated Cement Companies Ltd, Bombay
SHRI R. H. KULKARNI (<i>Alternate</i>)	
SHRI G. L. DUA	Rural Electrification Corporation Ltd, New Delhi
SHRI S. C. KHURANA (<i>Alternate</i>)	

(*Continued on page 2*)

© Copyright 1983

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

IS : 5039 - 1983

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI A. N. DUTT	Electrical Contractors Association of Eastern India, Calcutta
SHRI ABANI DUTA (<i>Alternate</i>)	
SHRI K. L. GARG	Directorate General of Supplies and Disposals, New Delhi
SHRI R. V. NARAYANAN (<i>Alternate</i>)	
SHRI L. GOPALAKRISHNAN	Directorate General of Technical Development, New Delhi
SHRI I. C. JOSEPH	In personal capacity (<i>ABACUS, Consulting Services, Bangalore</i>)
SHRI M. A. JOSHI	Bhartia Cutler Hammer Ltd, Faridabad
SHRI V. J. KANITKAR (<i>Alternate</i>)	
SHRI KAUSHAL DEV	Haryana State Electricity Board, Chandigarh
SHRI B. H. KHANDERIA	Tata Consulting Engineers, Bombay
SHRI U. G. KAMATH (<i>Alternate</i>)	
SHRI B. S. KOTHARI	The Bombay Electric Supply and Transport Undertaking, Bombay
SHRI A. A. KHANOLKAR (<i>Alternate</i>)	
SHRI K. C. LAHRI	Bharat Heavy Electricals Ltd, Hyderabad
SHRI R. SUBBA RAO (<i>Alternate I</i>)	
SHRI C. L. ABBEY (<i>Alternate II</i>)	
SHRI V. P. MAHENDRU	Northern India Switchgear Manufacturers' Association, Jalandhar
SHRI J. K. GUPTA (<i>Alternate</i>)	
SHRI J. K. MEHTA	The Ahmadabad Millowner's Association, Ahmadabad
SHRI R. M. THAKKER (<i>Alternate</i>)	
SHRI J. S. NEGI	Jyoti Ltd, Vadodara
SHRI V. B. DESAI (<i>Alternate</i>)	
SHRI H. M. PAI	The Ahmadabad Electricity Co Ltd, Ahmadabad
SHRI M. B. BAHULKAR (<i>Alternate</i>)	
DR G. M. PHADKE	Indian Electrical Manufacturers' Association, Bombay
SHRI A. SATISAN (<i>Alternate</i>)	
SHRI T. RAMANKUTTY	Tamil Nadu Electricity Board, Madras
SHRI K. SRINIVASAN (<i>Alternate</i>)	
SHRI R. P. SRIVASTAVA	Railway Board, New Delhi
SHRI R. SRINIVASAN (<i>Alternate</i>)	
SHRI U. S. VERMA	National Test House, Calcutta
SHRI D. P. MUKHERJEE (<i>Alternate</i>)	
SHRI M. P. WAGH	Larsen & Toubro Ltd, Bombay
SHRI V. N. DRAVID (<i>Alternate</i>)	
SHRI S. P. SACHDEV, Director (Elec tech)	Director General, BIS (<i>Ex-officio Member</i>)

Secretary

SHRI K. GANESH
Assistant Director (Elec tech), BIS

Indian Standard
SPECIFICATION FOR
DISTRIBUTION PILLARS FOR
VOLTAGES NOT EXCEEDING
1 000 V AC AND 1 200 V DC
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 27 September 1983, after the draft finalized by the Low Voltage Switchgear and Controlgear Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 Distribution pillars are used by a number of distributing agencies to interconnect, terminate, control, protect and sectionalize distribution feeders. They are generally located on public footpaths abutting the building line or along the kerb line of footpaths. This standard has been drawn up to unify the requirements of such distribution pillars.

0.3 This standard was originally brought out in 1969. This revision is undertaken with a view to update the contents as well as to introduce new concepts of diversity factor for distribution pillars. This revision takes into cognizance the distribution pillar as a form of factory built assembly, the general requirements for which are elaborately laid down in IS : 8623 (Part 1)-1977*.

0.4 This standard is intended to cover distribution pillars for use on single-phase and three-phase ac systems and dc systems. Isolators and switches associated with distribution pillars as also circuit breakers do not form part of the equipment and, therefore, are not covered by this standard. The standard also does not cover composite units of switches and fuses for which a separate standard exists.

0.5 The distribution pillars covered by this standard are intended to incorporate HRC type fuses/links only and of current rating not exceeding 630 amperes.

*Factory built assemblies of switchgear and controlgear for voltage up to and including 1 000 V ac and 1 200 V dc : Part 1 General requirements.

IS : 5039 - 1983

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard

1. SCOPE

1.1 This standard covers distribution pillars for voltages not exceeding 1 000 V ac or 1 200 V dc, the current rating in each outgoing or incoming circuit not exceeding 630 A, for use on ac or dc systems, in outdoor conditions

1.2 This standard covers distribution pillars incorporating HRC type fuses only. It does not cover other equipment such as switches, miniature circuit breakers, instruments, etc.

1.3 This standard also does not cover distribution fuse boards for which the provisions of IS : 2675-1983† shall apply.

2. TERMINOLOGY

2.0 For the purposes of this standard the definitions below, in addition to those given in IS : 1885 (Part 17)-1979‡ and IS : 8623 (Part 1)-1977§ shall apply.

2.1 **Distribution Pillar** — A totally enclosed self-supporting structure/cubicle containing busbars connected to incoming and outgoing distribution feeders controlled through links/fuses.

2.2 **Number of Ways of a Distribution Pillar** — The maximum number of circuit for which the distribution pillar is designed.

2.3 **Pole of a Distribution Pillar** — When a bus-bar of a distribution pillar is associated with its fuses and/or links for outgoing or incoming circuits, the bus bar along with its associated fuses and/or links is called a pole of the distribution circuit.

*Rules for rounding off numerical values (revised).

†Enclosed distribution fuse boards and cutouts for voltages not exceeding 1 000 V ac and 1 200 V dc (second revision).

‡Electrotechnical vocabulary : Part 17 Switchgear and controlgear (first revision).

§Factory built assemblies of switchgear and controlgear for voltages up to and including 1 000 V ac and 1 200 V dc : Part 1 General requirements.

2.4 Neutral of a Distribution Pillar — A bus-bar provided with terminals (and if required, links) for connection to the neutral conductor of outgoing and incoming circuits of a distribution system.

2.5 Conducting Part — A part which is capable of conducting current although it may not necessarily be used for carrying service current.

2.6 Clearance — The distance between two conducting parts along a string stretched the shortest way between these conducting parts.

2.7 Creepage Distance — The shortest distance between two conducting parts along the surface of the insulating material or along the joint of two insulating bodies.

2.8 Fuse-Way — A part of the distribution pillar containing one or more fuse-holder connected to one or more circuits.

NOTE 1 — The neutral may or may not form part of a fuse way.

NOTE 2 — The term 'Circuit' refers to each single load.

3. SERVICE CONDITIONS

3.1 Unless otherwise stated the distribution pillars shall be suitable for outdoor use under the following conditions:

a) The reference ambient temperature of 40°C.

NOTE — This takes into account the following:

- 1) Maximum ambient air temperature 45°C,
- 2) Maximum daily average ambient air temperature 35°C, and
- 3) Maximum yearly average ambient air temperature 30°C;

b) Altitude up to 1 000 m; above sea level;

c) Atmospheric climate not conducive to the growth of fungi and condensation of moisture; and

d) Atmospheres which are not heavily polluted.

3.1.1 Where the service conditions differ appreciably from those stated above, the manufacturer should state the appropriate derating factor applicable to the equipment.

IS : 5039 - 1983

3.2 Special service conditions may also exist as given in 5.2 of IS : 8623 (Part 1) - 1977* where such special service conditions exist, the applicable particular requirements shall be complied with or special agreement shall be made between the user and manufacturer.

4. CLASSIFICATION OF DISTRIBUTION PILLARS

4.1 Distribution pillars shall have circuits of the following types:

- a) Double-pole and neutral (DPN),
- b) Triple-pole (TP), and
- c) Triple-pole and neutral (TPN).

4.2 The preferred number of fuse-ways for double-pole and neutral, triple-pole and triple-poles and neutral distribution pillars shall be 4, 6, 8 and 10.

5. ELECTRICAL CHARACTERISTICS OF DISTRIBUTION PILLARS

5.1 Rated Voltage — The preferred rated voltages of distribution pillars shall be as follows:

ac single phase	= 240 V
ac three phase	= 415 V
dc 2 wire system	= 220 V
dc 3 wire system	= 440 V

5.2 Rated Current

5.2.1 Rating of Individual Circuits — The rated current of the outgoing or incoming circuits shall be as follows:

160, 200, 250, 400 and 630 amperes.

NOTE 1 — These ratings correspond to those of fuse-bases.

NOTE 2 — All the incoming circuits of the same distribution pillar shall have the same current rating and similarly all the outgoing circuits of the same distribution pillar shall have the same current rating. Unless otherwise specified the sum of the rated current of the incoming circuits shall be fixed at the $\frac{2}{3}$ of the sum of the current ratings of outgoing circuits, rounded up to the nearest higher value of the preferred current.

*Factory built assemblies of switchgear and controlgear for voltages up to and including 1 000 V ac and 1 200 V dc : Part 1 General requirements.

5.2.2 Rating of Bus-Bars — Unless otherwise specified, the rating of the phase bus-bars shall take into account the diversity factor given in 5.4. The current carrying capacity of the neutral bus-bar for DPN and TPN pillars shall be half that of the phase bus-bar.

NOTE 1 — The rated currents specified above shall be carried satisfactorily to comply with the temperature-rise test specified in 8.2.

NOTE 2 — In the case of bus-bars having a central feeding point it is permissible to have a phase bus-bar rating which is 50 percent of the normal rating computed on the basis of 5.2.2.

5.3 Rated Frequency — The rated frequency of distribution pillars in the case of ac shall be 50 Hz.

5.4 Rated Diversity Factor — The rated diversity factor of the distribution pillar having several incoming and outgoing circuits is the ratio of the maximum sum at any one time, of the assumed circuits of all the circuits involved, to the sum of the rated currents of all the circuits of the distribution pillar.

NOTE — When the manufacturer states a rated diversity factor this factor should be used for the purposes of temperature-rise test. In the absence of information, conventional values specified in Table 1 may be used.

TABLE 1 CONVENTIONAL VALUES OF DIVERSITY FACTOR

NUMBER OF FUSE-WAYS	DIVERSITY FACTOR
2 and 3	0.9
4 and 5	0.8
6 to 9 inclusive	0.7
10 and above	0.6

6. DESIGN AND CONSTRUCTION

6.1 Enclosure — The type of enclosure shall be able to provide the degree of protection IP 43 in accordance with IS : 2147-1962*.

6.1.1 It shall be in all respect suitable for outdoor installations. It shall be made from a suitable material to withstand rough usage and weather. If fabricated out of MS sheets the thickness of the sheet shall be at least 3.15 mm in accordance with IS : 1730 (Part 2)-1974†. A typical construction of enclosure is shown in Fig. 1.

*Degrees of protection provided by enclosures for low voltage switchgear and controlgear.

†Dimensions for steel plate, sheet and strip for structural and general engineering purposes : Part 2 Sheet (first revision).

IS : 5039 - 1983

The design of the distribution pillar shall be compact.

6.1.2 Canopy — The top of the pillar shall be fitted with a sloping canopy (see Fig. 1) design of which shall be such that rain water shall not accumulate on the top.

6.1.3 Doors — Distribution pillars shall have a set of double hinged doors at the front. Similar doors shall be provided at the back also; if specified. The doors shall be so fitted as to provide the interior with maximum protection from atmospheric conditions. The hinges shall be of such construction that the doors can be swung open by not less than 150°. In addition the hinged design shall permit doors being completely removed when necessary. The base horizontal member shall be completely removable to facilitate cable jointing.

6.1.4 Locking — The doors shall be provided with a suitable locking arrangement.

6.1.5 Aprons — If required, an apron (two if there are doors at the rear also) shall be provided below the door level of the pillar. They shall be easily removable. The apron shall be made from a suitable material to withstand rough usage. If made from sheet steel, the thickness of the sheet shall be at least 3.15 mm.

The height of the apron shall be specified by the purchaser.

6.1.6 Ventilation — Adequate ventilation shall be ensured by providing ventilation for the inlet and exhaust of air.

6.1.7 Corrosion Protection — The pillar shall be suitably protected against corrosion.

6.2 Pillar Lighting

6.2.1 A bayonet lamp holder complying with IS : 1258-1979*, with a tumbler switch, complying with IS : 3854-1966†, a three pin plug and socket complying with IS : 1293-1978‡ with necessary fuses and wiring shall be provided inside the pillar on the front-bottom portion of the shell near the neutral bus-bar.

*Bayonet lampholders (second revision).

†Switches for domestic and similar purposes.

‡Three pin plugs and socket outlets (first revision).

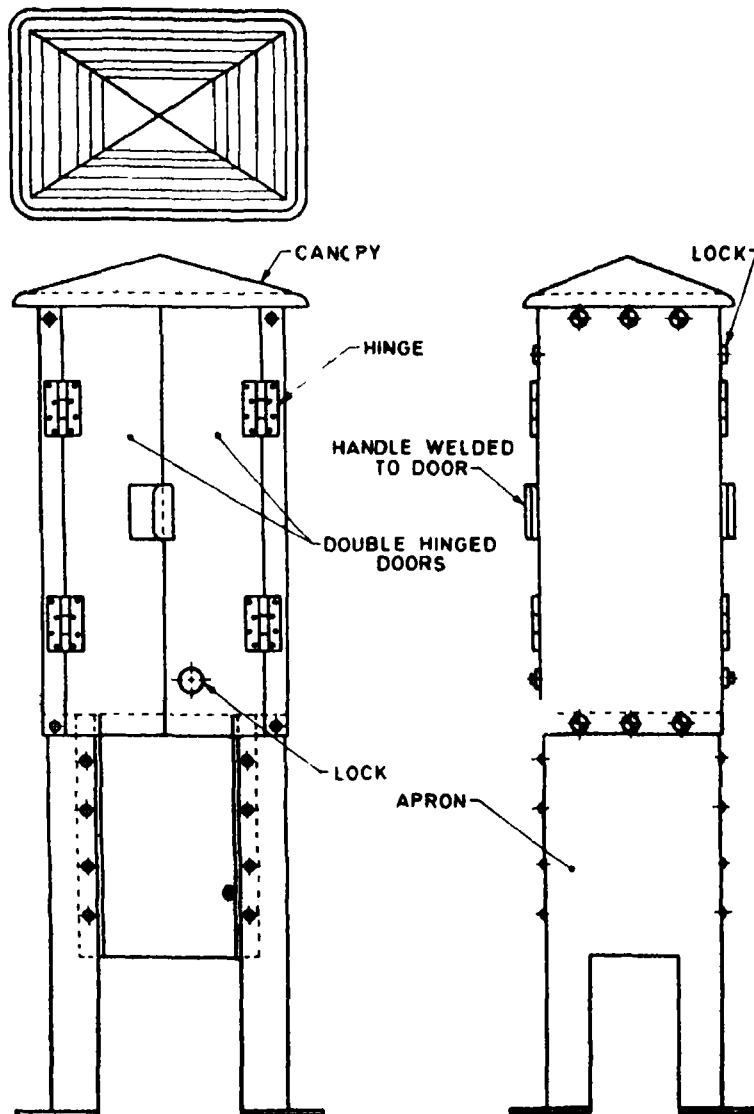


FIG. 1 A TYPICAL DISTRIBUTION PILLAR

IS : 5039 - 1983

6.3 Circuit Ways

6.3.1 Each circuit way shall be provided with removable HRC fuses or removable links of the required rating in accordance with IS : 9224 (Part 1)-1979*. The links and fuses shall be fitted into suitable bases and contacts conforming to the relevant Indian Standard and they shall be removable by insulated loose fuse grips to be provided for the purpose or by the grips permanently fixed to each link/fuse depending upon the standard practice of manufacturer.

6.4 Cable Connections

6.4.1 Cable boxes or glands, if required, shall be located at the bottom of the pillar and shall be rigidly mounted to the framework inside the pillar.

6.5 Incoming and Outgoing Terminals

6.5.1 The terminals shall be of substantial mechanical construction and shall provide adequate electrical contact for the appropriate size of cable used. To permit use of aluminium conductors they shall be capable of receiving the appropriate size of aluminium conductors.

6.5.2 Terminals connections shall be such that the conductors may be connected by means of screws or other equivalent means so as to ensure that the necessary contact pressure is maintained permanently.

6.5.3 Terminals shall be such that they may not turn or be displaced when the connecting screws are tightened and such that the conductor may not become displaced.

6.5.4 Terminals shall be so mounted that the appropriate cable may be connected without impairing the normal performance of the unit.

6.5.5 No contact pressure shall be transmitted through insulating material and the gripping of the conductor shall take place between metal faces.

6.5.6 If conductors are secured by means of pinching screws the ends of the pinching screws shall be so shaped as to minimize damage to the conductor.

6.5.7 Wherever it is necessary, the cables may be connected to the terminals on the fuse bases.

6.5.8 It shall be possible to safely connect or disconnect the terminals on live circuits. It shall also be possible to replace the fuse bases when the pillar is live. The measure to be taken to achieve the above shall be agreed upon between the purchaser and the supplier.

*Low voltage fuses : Part 1 General requirements.

6.5.9 Unless otherwise agreed between the manufacturers and user, on TPN fuseboards, terminals for the neutral conductor shall allow the connection of aluminium conductors having a current carrying capacity:

- a) equal to half the current carrying capacity of the phase conductor with a minimum of 25 mm², if the size of the phase conductor exceeds 25 mm²; and
- b) equal to the full current carrying capacity of the phase conductor if the size of the latter is less than or equal to 25 mm².

NOTE — For certain applications, in which the current in the neutral may reach high values (for example large fluorescent lighting installations) a neutral conductor having the same capacity as the phase conductor may be necessary.

6.6 Bus-bar

6.6.1 Suitable barriers shall be provided between bus-bars.

6.6.2 Marking and arrangement for bus-bars shall be in accordance with IS : 375-1963*.

6.7 Earthing

6.7.1 The metal casing of the distribution pillar shall be provided with two separate earthing terminals and the framework shall be metallically connected with the casing. These terminals shall be provided over and above all other means provided for securing metallic enclosures (armour or other metallic coverings of current carrying cables).

6.7.2 The earthing terminals shall be readily accessible and so placed that the earth connection of the distribution pillar is maintained when the cover or any other movable part is removed.

6.7.3 The earthing terminals shall be of adequate size, be protected against corrosion and shall be metallically clean. Under no circumstances shall a movable metal part of the enclosure be insulated from the part carrying the earthing terminals when the movable part is in place.

6.7.4 The earthing terminals shall be identified by means of the sign \downarrow marked in a legible and indelible manner on or adjacent the terminals.

*Marking and arrangement of switchgear busbars, main connections and auxiliary wiring (revised).

IS : 5039 - 1983

6.8 Clearances and Creepage Distances — The clearances and creepage distances shall be in accordance with IS : 4237-1982*.

6.9 Protective Measures with Regard to Electric Shock

6.9.1 The design of the distribution pillar shall ensure that there is no possibility of the operator experiencing a shock during normal operation. It should be possible for the operator to renew any fuse-link in complete safety. Insulated barriers shall be provided wherever necessary so as to ensure that no accidental contact with any live parts inside the distribution pillar is possible.

6.10 Fuses Installed in the Distribution Pillar

6.10.1 Fuses of the high rupturing capacity, installed in the distribution pillar, shall comply in all respects with IS : 9224 (Part 1)-1979†.

6.11 Identification

6.11.1 Suitable provisions shall be made in the distribution pillar, to identify the different circuits in respect of the distribution feeders they serve (*see also 7.1.2*).

6.12 Accessories

6.12.1 The following accessories may be provided with distribution pillar by agreement between the supplier and the user:

- a) Suitable short copper/aluminium links, fitted with lugs of appropriate shapes at the rear of each phase-neutral connection to facilitate neat arrangement of jumpers with adequate clearance between the cable box and the circuit link/fuse or neutral busbar;
- b) Copper/aluminium leads, round or square of size matching the maximum cable size and fitted as jumpers between the cable and circuit fuse/link or neutral and insulated by PVC sleeve or PVC tape, suitably coloured as may be specified;
- c) Suitable fixtures on circuit ways and busbars to provide bypass arrangement of a design to be approved by the purchaser; this arrangement will facilitate:

*General requirements for switchgear and controlgear for voltages not exceeding 1 000 V.

†Low voltage fuses: Part 1 General requirements.

- 1) taking of current readings; in such a case, by-pass lead will be first inserted to by-pass a fuse/link, after which fuse/link can be removed without interrupting supply and a clip-on ammeter inserted over the by pass lead;
- 2) replacing safely and conveniently a blown fuse, by first by-passing the main pillar fuse using by pass leads connected to by-pass single pole switch-fuse combination, mounted externally to the pillar; if the by-pass fuse stands when the single pole switch is switched on, the main pillar fuse will be reinserted and the by-pass arrangement removed, and

d) Two lifting lugs.

7. MARKING

7.1 The following information shall be clearly and indelibly marked on all distribution pillars or on a label permanently attached to it

- a) A reference to this standard, that is, IS : 5039-1983;
- b) Manufacturer's name or trade-mark;
- c) Country of manufacture;
- d) Rated voltage;
- e) Total number of outgoing circuit;
- f) Total number of incoming circuit;
- g) Rated current of incoming circuit;
- h) Rated current of outgoing circuit;
- j) Whether for use with ac, dc or both;
- k) Whether TPN, DPN or TP;
- m) Short-circuit strength; and
- n) Degree of protection.

7.1.1 By agreement between the manufacturer and the purchaser, the position of the poles may be indicated by colouring or other means. This may be incorporated in circuit label.

IS : 5039 - 1983

7.1.2 Provision shall be made in every distribution pillar to indicate by suitable means, such as labels, the position, the name and the current rating of each outgoing and incoming circuit, and also the current rating of the fuses. If a label is used it shall be capable of being permanently and securely fixed, preferably inside the case; if it is inside the case and label may be a printed paper label. Where a numbering label is not mounted below the relevant fuse-way the circuit numbering shall indicate by symbol and/or diagram the relation to the fuse-ways.

7.1.3 The distribution pillar may also be marked with Standard Mark.

7.1.4 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8. TESTS

8.1 Tests shall be broadly classified as given below.

8.1.1 *Type Tests* — The following shall constitute type tests:

- a) Verification of temperature-rise limits (*see* 8.2),
- b) Verification of dielectric properties (*see* 8.3),
- c) Verification of short-circuits strength (*see* 8.4),
- d) Verification of clearance and creepage distances (*see* 8.5), and
- e) Verification of degree of protection (*see* 8.6).

8.1.3 *Routine Test* — The test for verification of dielectric properties (*see* 8.3) shall be carried out as routine test.

8.2 Verification of Temperature-Rise Limits

8.2.1 The provisions of 8.2.1 of IS : 8623 (Part 1)-1977* shall apply.

8.2.2 The final temperature attained by the fuses and the cable terminals shall not exceed the values given in the relevant standards.

*Factory built assemblies of switchgear and controlgear for voltages up to and including 1 000 V ac and 1 200 V dc : Part 1 General requirements.

8.2.3 For this test, each circuit shall be loaded with rated current multiplied by the values of diversity factor given in 5.4.

8.2.4 Tests made on pillars having the largest number of ways normally offered in a particular current rating shall be deemed to prove, pillars of the same typical constructions and rating, but having a smaller number of ways.

8.3 Verification of Dielectric Properties

8.3.1 The provisions of 8.2.2 of IS : 8623 (Part 1)-1977* shall apply.

8.3.2 This test shall be made with the distribution pillar in clean new condition either immediately after manufacture or after having been exposed to the ordinary atmosphere with the door or doors of the distribution pillar open for at least 24 hours.

The individual ways of the distribution pillar are to be fitted with fuse-links as under normal operating conditions for the test.

8.3.3 The test voltage of value as given in Table 2 and of a frequency of 40 to 60 Hz shall be applied and maintained for one minute:

- a) Between pairs of poles,
- b) Between poles and neutral (when fitted), and
- c) Between current-carrying and non-current-carrying metal parts.

TABLE 2 TEST VOLTAGES

RATED VOLTAGE V	TEST VOLTAGE V (rms)
Up to and including 300	2 000
301 to 660	2 500
661 to 800	3 000
801 to 1 000	3 500

8.3.4 It is not necessary for the full test voltage to be switched on instantly. The voltage shall be increased as rapidly as is consistent with its value being indicated by the measuring instrument. The test voltage may be rapidly diminished before switching off.

*Factory built assemblies of switchgear and controlgear for voltages up to and including 1 000 V ac and 1 200 V dc : Part 1 General requirements.

IS : 5039 - 1983

8.3.5 During the test, one pole of the test transformer shall be connected to earth, and to earthed metal of the distribution pillar.

8.3.6 For the purposes of routine tests the 24 h exposure is not necessary. It shall also be sufficient to apply the test voltage for a period of 1 second for routine test purposes.

8.4 Verification of Short-Circuit Strength

8.4.1 Unless otherwise specified the short-circuit strength of distribution pillars shall not be less than that of the maximum rated fuse-link therein. The test for verification of short-circuit strength shall be subject to agreement between the supplier and the purchaser.

8.5 Verification of Clearance and Creepage Distances — It shall be verified that the clearance and creepage distances comply with the provisions of 6.8.

8.6 Verification of Degree of Protection — Test shall be done to verify conformity to 6.1 in accordance with the method given in IS : 2147-1962*.

*Degree of protection provided by enclosures for low voltage switchgear and controlgear.

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones 323 0131, 323 3375, 323 9402 Fax +91 011 3234062, 3239399, 3239382
E - mail bis@vsnl.com Internet . http://www.del.vsnl.net.in/bis.org

Central Laboratory:

Plot No 20/9, Site IV, Sahibabad Industrial Area, Sahibabad 201010

Telephone

77 00 32

Regional Offices:

Central Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 323 76 17

*Eastern 1/14 CIT Scheme VII, V I P Road, Kankurgachi, CALCUTTA 700054 337 86 62

Northern SCO 335-336, Sector 34-A, CHANDIGARH 160022 60 38 43

Southern C I T Campus, IV Cross Road, CHENNAI 600113 235 23 15

†Western Manakalaya, E9, MIDC, Behind Marol Telephone Exchange,
Andheri (East), MUMBAI 400093 832 92 95

Branch Offices:

Pushpak*, Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001 550 13 48

†Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road,
BANGALORE 560058 839 49 55

Commercial-cum-Office Complex, Opp Dushera Maidan, E-5 Arera Colony,
Brittan Market, BHOPAL 462016 72 34 52

62/63, Ganga Nagar, Unit VI, BHUBANESWAR 751001 40 36 27

Kalal Kathir Building, 670 Avinashi Road, COIMBATORE 641018 21 01 41

Plot No 43, Sector 16 A, Mathura Road, FARIDABAD 121001 28 88 01

Savitri Complex, 116 G T Road, GHAZIABAD 201001 71 19 98

53/5 Ward No 29, R G Barua Road, 5th By-lane, GUWAHATI 781003 54 11 37

5-8-56C, L N Gupta Marg, Nampally Station Road, HYDERABAD 500001 320 10 84

E-52, Chitrangan Marg, C- Scheme, JAIPUR 302001 37 38 79

117/418 B, Sarvodaya Nagar, KANPUR 208005 21 68 76

Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, 21 89 23
LUCKNOW 226001

NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010 52 51 71

Patliputra Industrial Estate, PATNA 800013 26 28 08

Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005 32 36 35

'Sahajanand House' 3rd Floor, Bhaktinagar Circle, 80 Feet Road,
RAJKOT 360002 36 85 86

T C No. 14/1421, University P. O Palayam, THIRUVANANTHAPURAM 685034 32 21 04

*Sales Office is at 5 Chowringhee Approach, P.O. Princep Street,
CALCUTTA 700072 27 10 85

†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007 309 65 28

†Sales Office is at 'F' Block, Unity Building, Narashimara Square,
BANGALORE 560002 222 39 71